European Cooperation in Science and Technology

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Action FP0903

2009 - 2013

Climate Change and Forest Mitigation and Adaptation in a Polluted Environment

Participating countries: AT, BE, BA, BG, CZ, HR, DK, EE, FI, FR, DE, GR, IL, IT, LV, LT, NL, NO, PL, PT, RO, RS, SK, SI, ES, SE, CH, TR, UK

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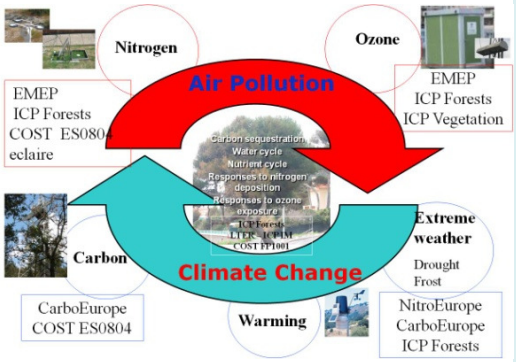
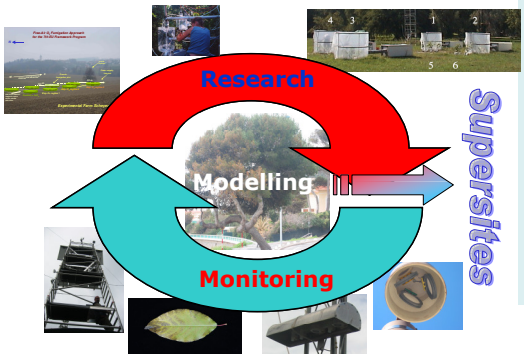
Integration among themes



Integration among approaches



Working Group 1 - Availability and evaluation of monitoring data

A review of current sites and measurements is carried out, along with a comprehensive analysis of present data sets from different European monitoring programs (with special reference to EMEP, ICP Forests, CarboEurope, NitroEurope and the COST Action ES0804 on atmosphere-biosphere fluxes). The main focus is on ozone, nitrogen, carbon sequestration, increased temperature and extreme climatic events..

Working Group 2 – Scientific gaps and modelling

Topical limitations to the present scientific knowledge are addressed. Prospects are prioritised based on their technical feasibility and added value for research and operational communities. This knowledge adds information that is useful for the parameterization of models. An assessment of the present model uncertainties will result in improved outputs of models (with special reference to dynamic modelling of carbon and nitrogen budgets, and ozone flux).

Working Group 3 – Protocols and supersites

Monitoring sites, specific requirements, measurement techniques, instrumentation, maintenance, procedures for calibration, data processing and storage will be standardised, based on the WG1 and WG2 results.

Working Group 4 – Training and transfer of results

As most of the Action work load is due to common activities, the conceptual work is done by WGs 1, 2 and 3, while WG4 leads the practical details of the organization of common events (training courses, conferences, workshops) and the circulation of results of the Action activities (website, newsletter, publications, contacts with policy makers and end users). This work is done in close agreement with the Management Committee and the other WGs.

Main objectives:

- To increase understanding of state and potential of forest mitigation and adaptation to climate change in a polluted environment
- To reconcile process-oriented research, long-term monitoring and applied modelling at comprehensive forest research sites (Supersites)

Secondary objectives:

- to expand the evaluation of the presently available data;
- to identify current knowledge gaps and emerging research needs;
- to optimise the geographical distribution of Supersites and assure coverage of the most relevant ecosystems in Europe;
- to assess the value and ecological meaning of measurements and identify which measurements are a priority;
- to develop criteria and standardized protocols for data acquisition, processing, upscaling and storage;
- to promote and facilitate the use of the results beyond the initial targeted research communities.

Main Achievements:

- **Networking**. The Action networked for the first time representatives of the main networks/institutions working with air pollution, climate change and forests in Europe and got a high number of signatory countries, WG members, participants to the conferences, short-term missions and website contacts.
- **To collate monitoring data bases from different sources**. Data from existing monitoring programmes can be used to answer questions about the impacts of air pollution and climate change on forest ecosystems. However, for full use to be made of the available data, a number of questions need to be answered. The Action collected information about accessibility of these databases; intellectual property rights; possibilities for databases harmonisation; quality assurance/quality control procedures.
- **To identify current knowledge gaps and emerging research needs**. The Action identified the following knowledge gaps and research needs: (i) interaction between changes in air quality (trace gas concentrations) and climatic factors on forest ecosystem response, (ii) significance of biotic processes in system response, (iii) tools for mechanistic and diagnostic understanding and (iv) the need for unifying modelling and empirical research.
- **To develop sites where integrated soil, plant and atmospheric research and monitoring will be carried out (Supersites).** Representatives from major European networks recommended a system of supersites for forest monitoring and research in Europe, based on a small number of highly instrumented “supersites” and a large number of lower intensity monitoring sites. The system needs to be based on existing infrastructures but requires more coordination, harmonisation and a joint medium to long term strategy.

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